

State/Industry Ambient Monitoring Network

Air Quality Report

4<sup>th</sup> Quarter 2002

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## **SECTION ONE**

### **DISCUSSION OF MONITORING RESULTS**

### Sulfur Dioxide (SO<sub>2</sub>)

There were no exceedances of the state or federal standards during the quarter. The maximum 1-hour concentration was 140 ppb on October 24 at Amerada Hess - Tioga #1; the maximum 3-hour concentration was 86 ppb on October 24 at Amerada Hess - Tioga #1; and, the maximum 24-hour concentration was 47 ppb on October 24 at Amerada Hess - Tioga #1 . All sites achieved at least an 80% data recovery for the period.

### Sulfur Dioxide (SO<sub>2</sub>) 5-Minute Average

The maximum 5-minute concentration was 302 ppb on October 22 at Amerada Hess - Tioga #3.

### Ozone (O<sub>3</sub>)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 68 ppb on November 27 at TRNP - NU. The 4<sup>th</sup> highest 8-hour concentration was 40 ppb on October 10 at TRNP - NU.

### Nitrogen Dioxide (NO<sub>2</sub>)

The maximum 1-hour concentration observed was 30 ppb on December 24 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated except Hannover.

### Ammonia (NH<sub>3</sub>)

Due to delays receiving repair parts, the analyzer was down the entire quarter.

The data is used as part of the ambient data input used by the newer dispersion models.

### Inhalable Continuous PM<sub>2.5</sub> Particulates

The maximum 1-hour concentration was 49.7  $\mu\text{g}/\text{m}^3$  on December 23 at Hannover. The maximum 24-hour concentration was 19.3  $\mu\text{g}/\text{m}^3$  on December 23 at Hannover. All sites achieved at least an 80% data recovery for the period operated..

### Inhalable FRM PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 20.0  $\mu\text{g}/\text{m}^3$  on November 16 at Fargo NW. All sites achieved at least an 80% data recovery for the period.

### Inhalable PM<sub>10</sub> Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 43.0  $\mu\text{g}/\text{m}^3$  on November 11 at Fargo NW. An 80% data recovery was achieved for the period operated.



## **SECTION TWO**

**AMBIENT AIR QUALITY DATA**

**SUMMARIES**

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M	A	X	I	M	A	24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	3 MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD						
Amerada Hess - Tioga #1	2002	OCT-DEC	2177	140 10/24/02	134 10/25/03	86 10/24/02	73 10/24/05	47 10/24	15 10/23	2.3		11.6					
Amerada Hess - Tioga #3	2002	OCT-DEC	2177	118 10/22/06	115 12/18/12	82 10/29/17	74 12/18/14	20 12/18	16 10/22	3.6		19.1					
Bear Paw - MGP #3	2002	OCT-DEC	2007	9 11/09/19	7 12/20/12	6 11/09/20	4 12/22/02	2 12/20	2 10/22	1.1		4.4					
Bear Paw - MGP #5	2002	OCT-DEC	2192	8 12/31/17	6 12/16/20	4 12/21/17	4 12/31/05	2 12/31	2 12/22	1.1		4.9					
Beulah - North	2002	OCT-DEC	2195	19 10/20/10	18 12/08/12	15 10/20/11	14 12/08/14	4 10/20	3 10/08	1.4		11.9					
DGC #12	2002	OCT-DEC	2192	22 12/02/08	20 11/06/12	16 11/29/11	16 12/02/08	6 12/19	5 11/22	1.8		20.3					
DGC #14	2002	OCT-DEC	2167	22 10/09/15	21 11/09/09	14 12/02/11	13 10/21/11	5 12/02	4 11/07	1.5		11.2					
DGC #16	2002	OCT-DEC	2187	31 12/29/02	22 12/02/10	16 11/06/14	14 12/15/14	5 12/02	4 12/29	1.4		9.1					
DGC #17	2002	OCT-DEC	2193	37 12/29/03	28 11/08/22	23 12/29/05	17 12/02/11	6 11/08	6 12/29	1.5		24.7					
Dunn Center	2002	OCT-DEC	2196	15 10/21/15	11 12/02/07	7 10/21/17	6 12/02/08	3 10/20	2 10/21	1.1		8.2					
Fargo NW	2002	OCT-DEC	2163	6 12/25/03	6 12/25/04	6 12/25/05	4 12/25/08	3 12/25	2 12/29	1.1		4.9					
Hannover	2002	OCT-DEC	2191	23 10/28/22	21 12/03/13	17 12/24/02	13 10/27/14	4 12/24	4 11/08	1.6		19.7					
Mandan - SPM	2002	OCT-DEC	2195	102 12/22/19	96 12/19/18	66 12/22/20	63 11/20/23	27 11/21	20 10/08	5.0		38.0					
Mandan NW - SPM	2002	OCT-DEC	2102	55 12/16/03	49 10/27/19	35 12/16/05	33 10/27/20	10 12/17	9 10/27	2.7		32.4					

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
TRNP - NU	2002	OCT-DEC	2192	6 12/05/09	5 10/20/11	5 12/05/11	4 10/20/11	2 10/29	2 12/03	1.1			5.7
TRNP - SU (Painted Canyon)	2002	OCT-DEC	2196	26 10/10/14	15 10/24/14	10 10/24/17	9 10/10/14	3 10/24	3 10/10	1.1			5.0
White Shield	2002	OCT-DEC	2187	17 10/27/13	14 12/16/20	11 10/27/14	11 12/31/20	4 12/31	3 12/16	1.3			7.6

The maximum 1-hour concentration is 140 ppb at Amerada Hess - Tioga #1 on 10/24/02  
The maximum 3-hour concentration is 86 ppb at Amerada Hess - Tioga #1 on 10/24/02  
the maximum 24-hour concentration is 47 ppb at Amerada Hess - Tioga #1 on 10/24

\* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5 - M I N U T E		M A X I M A		# HOURS >600	% >MDV		
				1ST MM/DD/HH	DATE MM/DD/HH	2ND MM/DD/HH	DATE MM/DD/HH				
Amerada Hess - Tioga #1	2002	OCT-DEC	2177	301	10/24/00	273	10/25/01	249	10/24/02	0	17.7
Amerada Hess - Tioga #3	2002	OCT-DEC	2177	302	10/22/11	280	10/22/06	271	10/29/17	0	28.9
Bear Paw - MGP #3	2002	OCT-DEC	2007	30	11/09/19	19	12/20/12	14	10/22/14	0	11.5
Bear Paw - MGP #5	2002	OCT-DEC	2192	15	12/15/15	13	12/29/09	13	12/31/17	0	11.0
Beulah - North	2002	OCT-DEC	2195	50	10/05/10	47	12/08/12	33	12/08/13	0	19.0
Dunn Center	2002	OCT-DEC	2196	25	10/21/15	25	12/02/07	11	10/28/10	0	21.0
Fargo NW	2002	OCT-DEC	2163	8	12/29/10	7	10/13/22	7	11/06/21	0	9.8
Hannover	2002	OCT-DEC	2191	55	10/28/22	45	12/03/13	40	10/22/12	0	30.8
Mandan - SPM	2002	OCT-DEC	2195	155	12/19/17	153	12/30/00	151	11/22/20	0	50.4
Mandan NW - SPM	2002	OCT-DEC	2102	126	12/03/06	116	12/29/14	99	12/16/03	0	48.1
TRNP - NU	2002	OCT-DEC	2192	15	10/29/10	13	10/29/11	9	10/07/15	0	11.1
TRNP - SU (Painted Canyon)	2002	OCT-DEC	2196	53	10/10/14	32	10/10/15	25	10/09/09	0	11.1

The maximum 5-minute concentration is 302 ppb at Amerada Hess - Tioga #3 on 10/22/11

\* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A				8 - HOUR				4TH MM/DD/HH	1HR #>120	8HR #>80	
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH							
Beulah - North	2002	OCT-DEC	2196	50 10/10/14	49 10/10/15	42 10/10/10	35 10/10/11	35 10/10/09	35 10/13/10						
Dunn Center	2002	OCT-DEC	2198	52 10/10/14	51 10/10/15	46 10/10/09	38 10/10/10	38 10/10/08	38 10/10/11						
Fargo NW	2002	OCT-DEC	2166	40 10/14/14	37 10/02/15	37 12/20/22	34 12/20/21	34 12/20/20	34 12/20/23						
Hannover	2002	OCT-DEC	2194	43 10/10/13	43 10/10/14	39 10/10/09	33 10/10/08	33 10/10/10	33 10/10/07						
TRNP - NU	2002	OCT-DEC	2196	68 11/27/14	53 10/10/14	47 10/10/09	40 10/10/08	40 10/10/10	40 10/10/07						
TRNP - SU (Painted Canyon)	2002	OCT-DEC	2196	68 10/10/15	62 10/10/14	49 10/10/10	38 10/10/09	38 10/10/11	38 10/10/12						

The maximum 1-hour concentration is 68 ppb at TRNP - NU on 11/27/14  
The 4th highest 8-hour concentration is 40 ppb at TRNP - NU on 10/10/07

\* The air quality standards for ozone are:  
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		ARITH MEAN	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH		
Beulah - North	2002	OCT-DEC	1987	15 10/02/05	15 10/02/06	2.6	60.0
DGC #12	2002	OCT-DEC	2177	23 10/22/00	21 11/08/01	2.8	61.8
DGC #17	2002	OCT-DEC	2186	18 12/02/10	16 12/02/09	2.4	61.0
Dunn Center	2002	OCT-DEC	2191	12 12/18/02	12 12/18/03	1.5	28.5
Fargo NW	2002	OCT-DEC	2139	30 12/24/20	30 12/24/21	6.1	78.4
Hannover	2002	OCT-DEC	2187	27 12/24/03	24 12/24/00	2.2	43.5
TRNP - NU	2002	OCT-DEC	2187	7 11/13/19	7 12/17/02	1.3	22.2

The maximum 1-hour concentration is 30 ppb at Fargo NW on 12/24/20

\* The air quality standards are:  
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ammonia (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A					
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	4TH MM/DD/HH	5TH MM/DD/HH	6TH MM/DD/HH
Beulah - North	2002	OCT-DEC	0   ***	-1.0 00/00/00	-1.0 00/00/00	-1.0 00/00/00	-1.0 00/00/00	-1.0 00/00/00	-1.0 00/00/00

\* No standard is currently in effect.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable Continuous PM<sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A				24 - HOUR				1HR #>150	24HR #>65
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	MEAN			
Beulah - North	2002	OCT-DEC	2200	31.6 10/15/15	31.5 11/12/12	12.9 10/15	11.0 11/12	10.2 12/16	9.7 12/17	5.6			
Fargo NW	2002	OCT-DEC	2173	43.4 11/07/18	40.5 11/07/17	14.4 11/07	10.8 11/09	8.7 11/08	7.9 10/26	3.9			
Hannover	2002	OCT-DEC	2200	49.7 12/23/17	48.5 12/23/09	19.3 12/23	11.2 11/12	11.2 11/08	11.0 11/03	5.7			
TRNP - NU	2002	OCT-DEC	2083	29.3 12/02/08	25.3 10/28/09	9.1 12/17	8.6 10/28	8.5 11/14	8.2 12/02	4.8			

The maximum 1-hour concentration is 49.7  $\mu\text{g}/\text{m}^3$  at Hannover on 12/23/17  
The highest 24-hour concentration is 19.3  $\mu\text{g}/\text{m}^3$  at Hannover on 12/23

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65  $\mu\text{g}/\text{m}^3$ .
- 2) Annual: 3-year average not to exceed 15  $\mu\text{g}/\text{m}^3$ .

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable FRM PM<sub>2.5</sub> Particulates ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2002	OCT-DEC	15	2.2	15.5 12/16	7.9 11/16	7.1 11/04	5.2			100.0
Bismarck Residential	2002	OCT-DEC	31	3.1	15.0 11/04	13.9 11/13	12.6 12/16	6.5			100.0
Fargo NW	2002	OCT-DEC	30	1.3	20.0 11/16	18.5 11/07	17.1 11/13	8.4			96.7
TRNP - NU	2002	OCT-DEC	15	2.3	9.7 12/16	6.7 11/16	6.2 12/04	4.7			100.0
TRNP - SU (Painted Canyon)	2002	OCT-DEC	15	1.0	6.9 10/23	6.3 12/04	4.3 10/11	3.2			73.3

The maximum 24-hour concentration is 20.0  $\mu\text{g}/\text{m}^3$  at Fargo NW on 11/16

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65  $\mu\text{g}/\text{m}^3$ .
- 2) Annual: 3-year average not to exceed 15  $\mu\text{g}/\text{m}^3$ .

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Particulates ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2002	OCT-DEC	15	6.0	22.0 11/04	19.0 12/10	19.0 12/16	12.7			100.0
Dragswolf	2002	OCT-DEC	13	1.6	18.5 12/16	5.7 11/16	5.4 11/10	4.7			61.5
Fargo NW	2002	OCT-DEC	30	1.0	43.0 11/07	28.0 12/10	27.0 12/13	15.3			96.7
TRNP - NU	2002	OCT-DEC	15	4.0	11.0 12/16	10.0 12/04	9.0 10/11	6.8			100.0
White Shield	2002	OCT-DEC	13	3.0	17.0 12/16	8.1 10/17	8.1 10/23	6.0			76.9

The maximum 24-hour concentration is 43.0  $\mu\text{g}/\text{m}^3$  at Fargo NW on 11/07

\* The STATE and FEDERAL air quality standards are:

- 1) 150  $\mu\text{g}/\text{m}^3$  maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50  $\mu\text{g}/\text{m}^3$  expected annual arithmetic mean.



### **SECTION THREE**

#### **EXCEEDANCE LISTINGS**

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )

The \* Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )

The \* Identifies the Exceedances

NONE